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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,473	02/21/2002	Hoki Kwon	15436.438.1	4854
22913 7590 02/08/2007 WORKMAN NYDEGGER (F/K/A WORKMAN NYDEGGER & SEELEY) 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111			EXAMINER NGUYEN, DUNG T	
			ART UNIT 2828	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/078,473

Applicant(s)

KWON, HOKI

Examiner

Dung (Michael) T. Nguyen

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-21 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

OFFICE ACTION

The indicated allowance of claims 1-9 and 11-12 are hereby withdrawn due to newly founded prior art.

Claim Objections

Claim 5 is objected to because of the following informalities: TmSh should be TMSb.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurtz et al. (5995529).

With respect to claims 1-2, col.3, 1.60 discloses a method of locating a substrate 12 in an MOCVD chamber; setting a temperature of the MOCVD chamber between 500 °C and 650 °C; and growing a tunnel junction (buffer layer 28) including GaAs(1_×)Sb× on the substrate using an MOCVD process in which a source of Ga, a source of Sb, and a source of As are present.

With respect to claims 5-6, col.3, 1.19-35 discloses TEGa, TMSb, and AsH3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurtz et al. (5995529) in view of Stanchina et al. (5349201). Kurtz et al. disclose all limitations of the claims except for the value range of x.

Stanchina et al. teach the value range of x between 0 and 1 in col.3, 1.4-5.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Kurtz et al. what is taught by Stanchina et al. to have a variety of x values in the GaAsSb layer.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurtz et al. (5995529) in view of EP0715357. Kurtz et al. disclose all limitations of the claims except for carbon doping using CCL4.

EP0715357 teaches carbon doping using CCL4 of GaAsSb in col.3, 1.1-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Kurtz et al. what is taught by EP0715357 as a source to dope GaAsSb (col.3, 1.11-12).

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Claims 8-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (2003/0032252).

With respect to claim 8, Pan shows in Fig.4 a p-doped GaAs(1-x)Sb_x layer 108 and an n-doped layer of AlInGaAs 110 with a concentration between 1×10^{16} to 1×10^{18} cm⁻³.

However, Pan fails to disclose the n-doped layer is doped with a concentration greater than 5×10^{19} cm⁻³.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to do so, since it has been held that that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1908). Furthermore, the specification contains no disclosure of either the critical nature of the claimed doping value or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen values or upon another variable recited in the claim, the applicant must show that the chosen value is critical. In re Woodruff, 919 F.2d, 1575, 1578, 16 USPQ2d, 1936 (Fed. Cir. 1990).

With respect to claims 9 and 11, Pan disclose in para.0048 the GaAs(1-x)Sb_x layer is doped with a concentration greater than 5×10^{19} cm⁻³, and wherein the tunnel junction (base space layer) is less than about 10 nanometers thick.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (2003/0032252) in view of Moll et al. (2004/0104403). Pan et al. disclose all limitations of the claims except for the n-doped layer is InP and x has a value of 0.5.

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Moll et al. teach the n-doped layer is InP and x has a value of 0.5 in para.0034.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Pan et al. what is taught by Moll et al. to maintain a high current gain (para.0034).

Allowable Subject Matter

Claims 13-21 are allowed over the Choquette et al. (2001/0050934) which disclose all limitations of the claims except for the tunnel junction includes a GaAsSb layer.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.



Michael Dung Nguyen

1/24/07